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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,690	10/20/2003	Wayne Shanks	1689.0290001	2849

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EXAMINER	
YANG, CLARA I	

ART UNIT	PAPER NUMBER
2635	

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/687,690	SHANKS ET AL.	
	Examiner	Art Unit	
	Clara Yang	2635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-16,20 and 21* is/are allowed.

6)☒ Claim(s) *17,22 and 25-27* is/are rejected.

7)☒ Claim(s) *18,19,23 and 24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because the maximum length of 150 words has been exceeded. Correction is required. See MPEP § 608.01(b).

Allowable Subject Matter

2. Claims 1, 2-16, 20, and 21 are allowed.

3. Claims 18, 19, 23, and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Objections

4. Claim 25 is objected to because of the following informalities: The limitation is not in idiomatic English. The source of the tag population data should be inserted between "from" and "external". Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 17 and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Hulvey (US 6,727,803).

Referring to claim 17, Hulvey teaches a binary tree traversal protocol for identifying a plurality of radio frequency identification (RFID) transponders (i.e., tags) (see Abstract and Fig. 8). To illustrate Hulvey's method, assume four transponders with binary IDs of 100, 101, 011, and 001 are present in the field of scanning transceiver 2 and that K, which represents the number of ID bits, equals three (see Fig. 1 and Col. 9, lines 34-35). Hulvey's method, as shown in Figs. 6 and 8, comprises the steps of: (a) entering root node 168 (i.e., a logical node in a binary tree) at steps 72 and 74 (see Col. 12, lines 28-31); (b) transmitting a SYNC symbol followed by a CHANGE1 symbol to a population of RFID transponders at steps 72 and 74 (see Col. 9, lines 43-46 and Col. 12, lines 31-35); and (c) determining that a ONE symbol and a ZERO symbol are received from the transponders at step 76 (see Col. 9, lines 47-50). In the given example, a ONE symbol and a ZERO symbol are received at step 80 because the most significant bit (MSB) of transponders 100 and 101 is a "1", and the MSB of transponders 011 and 001 is a "0". Transceiver 2 then creates a copy of the current bit string buffer (which is empty and K=0) at step 88, appends a "0" to the copy bit string buffer (new bit string=0, K=1) at step 90, pushes the new bit string (which represents node 168) to the non-isolated tag stack at step 96, appends a "1" to the current bit string (bit string=1, K=1) at step 98, and transmits a CHANGE2 symbol, causing transponders 100 and 101 to transmit their second MSB, which is "0" for both transponders. It is understood that the step of pushing the new string "0" to a non-isolated stack, which is an abstract data structure of a series of bits at a node requiring further isolation (see Col. 9, lines 30-34 and Col. 13, lines 51-57), is the step of (d) adjusting information stored for node 168. Transceiver 2 detects the bit at step 76, determines that only a ZERO symbol has been received at step 80, appends the "0" to the current bit string (bit string=10, K=2) at step 82, and transmits a READ command at step 86 (i.e., enters logical node 170), causing transponders 100 and 101 to transmit their least significant bit (LSB) and transceiver 2 to receive both a "1" and a "0" at step 80. Transceiver 2

then creates a copy of the bit string buffer (new bit string=10, K=2) at step 88, appends a "0" to the copy (new bit string=100, K=3) at step 90, pushes "100" to the isolated tag stack since K=3, appends a "1" to the current bit string (bit string=101, K=3) at step 98, and also pushes "101" to the isolated tag stack at step 104 since K=3. At this point, transceiver 2 has isolated transponders 100 and 101. Consequently, Hulvey's method also comprises the steps of: (e) selecting which logical value to store as a bit of a tag bit pattern at steps 80 and 82; (f) storing the selected logical value as the bit of the tag bit pattern at steps 82, 90, and 98; (g) determining if the bit string length=K (i.e., determining whether the bit pattern is complete) at steps 84, 92, and 100; and (h) entering a logical node (e.g., node 170) if the bit pattern is incomplete at step 84. Transceiver 2 then checks the non-isolated stack and determines that "0" exists in the non-isolated tag stack at step 108, and returns on node 168 at step 74. The method is then repeated to isolate transponders 011 and 001. (For an detailed explanation of Figs. 6 and 8, see Col. 9, lines 27-67; Col. 10, lines 1-37; Col. 12, lines 28-67; Col. 13, lines 1-67; and Col. 14, lines 1-43.)

Referring to claim 22, as explained in the rejection of claim 1, Hulvey's method includes storing nodes that received both a ONE symbol and a ZERO symbol in a non-isolated tag stack (see Fig. 6, steps 88, 90, 92, and 96). In the above given example, transceiver 2 receives a ONE symbol and a ZERO symbol at node 168 because transponders 100, 101, 011, and 001 are present in the field of transceiver 2 and stores a "0" in the non-isolated tag stack, wherein the "0" indicates a population of tags with a MSB of "0" at node 168; thus Hulvey's method includes the step of: (a) storing tag population data including information associated with a populated node in a binary tree. After isolating transponders 100 and 101, the process starts again and node 168 to isolate transponders 011 and 001. At step 74, transceiver 2 transmits a CHANGE1 symbol, causing the non-isolated transponders to transmit their second MSB. Transceiver 2 then receives a "1" and a "0" at step 80,

creates a copy of the bit string buffer (copy bit string="0", K=1), appends a "0" to the copy (new bit string="00", K=2), pushes the new string "00" to the non-isolated tag stack at step 96, appends a "1" to the current bit string (bit string="01", K=1) at step 98, transmits a CHANGE2 symbol at step 102, detects a "1" from transponders 011 and 001, appends the "1" to the bit string buffer (bit string buffer="011", K=3) at step 82, pushes "011" to the isolated tag stack at step 104, determines that "00" exists in the non-isolated tag stack at step 108, transmits a CHANGE1 symbol at step 74, receives a "1" at step 80, appends the "1" to the bit string buffer (bit string buffer="001", K=3) at step 84, pushes "001" to the isolated tag stack at step 104, determines that the non-isolated tag stack is empty at step 108, and stops the process at step 78. Thus, when isolating transponders 100, 101, 011, and 001 in the field, Hulvey's method also includes the step of: (b) transceiver 2 determining a traversal path based on the tag population data.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in

order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hulvey (US 6,727,803) as applied to claim 22 above, and further in view of Armstrong (US 2002/0175805).

Regarding claims 25-27, Hulvey's tag population data is obtained from the transponders by transceiver 2 instead of an external source to transceiver 2 (as called for in claim 25), such as a second transceiver (as called for in claim 26) or a database (as called for in claims 27).

In an analogous art, Armstrong teaches a method and system for communicating with a plurality of RFID transponders 150. As shown in Fig. 1, Armstrong's method includes: (a) host computer 100 obtaining tag population data via interrogator #1 as well as interrogators #2 and #3 (i.e., second and third readers external of the reader) (see Sections [0044] and [0047]); and (b) host computer 100 having identification (Tag_ID) database of a population of transceivers 150 and obtaining at least some of the tag population data from the database (see Section [0062] and [0063]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Hulvey's method as taught by Armstrong because a plurality of interrogators enable the system to cover a large area (see Armstrong, Section [0014]) and obtaining tag population data from a database enables transceiver 2 to interrogate specific transponders in order to determine if they are present in transceiver 2's field, which is desirable in RFID tracking systems (see Armstrong, Section [0064]).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Snodgrass et al. (US 5,365,551) teach an RFID system having a plurality of interrogators, wherein each interrogator uses a binary tree traversal protocol to identify a plurality of transponders.

- Wood, Jr. (US 6,118,789) teaches a binary tree traversal protocol, wherein the maximum number of tags (i.e., tag population data) is provided to interrogator 26, which uses the maximum number of tags to determine which node levels to skip in order to uniquely identify the tags.

- Carrender et al. (US 2003/0137403) teach an RFID system, wherein the reader performs a checksum on a tag's identification code and uses a binary tree traversal algorithm to resolve collisions.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clara Yang whose telephone number is (571) 272-3062. The examiner can normally be reached on 8:30 AM - 7:00 PM, Monday - Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Horabik can be reached on (571) 272-3068. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CY
18 August 2005

Clara Yang